

REMARKS:

- 1) Referring to item 10) of the Office Action Summary, the Examiner is respectfully requested to indicate the acceptance of the drawings filed on March 1, 2004.
- 2) The Examiner's attention is directed to applicant's second Information Disclosure Statement, which was filed on May 17, 2006. Please consider the references and return an initialed, signed and dated acknowledgment copy of the IDS Form PTO-1449 of May 17, 2006, together with the next official communication.
- 3) The Examiner's attention is further directed to applicant's third Information Disclosure Statement being filed together with the present Response on July 7, 2006. Please consider the references and return an initialed, signed and dated acknowledgment copy of the IDS Form PTO-1449 of July 7, 2006, together with the next official communication.
- 4) The specification has been amended to update the Cross-Reference to Related Application to show that the parent application has now issued as US Patent 6,723,770. The specification has further been editorially amended to correct a few typographical errors. These amendments do not introduce any new matter. Entry thereof is respectfully requested.
- 5) The claims have been amended as follows. Independent claim 1 has been amended to clarify that the organic-inorganic composite

materials are respectively produced by polycondensating a metal alkoxide of a metal element, and that the layers of the respective organic-inorganic composite materials respectively have different concentrations of said metal element in the respective organic-inorganic composite materials. The "mixing" step at lines 8 and 9 of claim 1 has also been clarified. Claims 16 to 27 have been canceled. These editorial amendments do not introduce any new matter. Entry and consideration thereof are respectfully requested.

- 6) This is a Statement of Substance of Interview. On March 31, 2006 the undersigned attorney called the Examiner, and on April 3, 2006 the Examiner returned the call. In the telephone interview on April 3, 2006, the undersigned attorney pointed out a conflict in the Office Action of March 24, 2006, namely that section 13 on page 7 indicates "claims 1-15 are allowable over the closest references", while section 12 on page 6 indicates that "claims 1-15 are rejected ... (on prior art grounds)". The Examiner agreed to withdraw the Office Action of March 24, 2006, and instead issue a new clarified replacement Office Action, which was then issued on April 7, 2006. The period for reply runs from April 7, 2006.
- 7) Referring to sections 2 to 6 on pages 2 and 3 of the Office Action, the election of the Group I claims 1 to 15 is hereby affirmed. The non-elected Group II claims 16 to 27 have been canceled.

8) Referring to section 8 on pages 3 to 4 of the Office Action, the rejection of claims 1 to 15 as indefinite under 35 U.S.C. 112(2) has been taken into account in the present amendment and is respectfully traversed. Currently amended claim 1 makes clear that the respective composite materials are respectively produced by polycondensating a metal alkoxide of a metal element, and that the layers of the respective composite materials respectively have different concentrations of said metal element in the respective organic-inorganic composite materials. Thus, claim 1 is now clear and definite, and conforms to the Examiner's understanding that the different concentrations of the metal element refer to a different concentration of the metal element in the respective organic-inorganic composite material, and that the metal alkoxide recited at line 5 of claim 1 is a metal alkoxide of the pertinent metal element. For these reasons, claim 1 is clear and definite, and the Examiner is respectfully requested to withdraw the rejection of claims 1 to 15 under 35 U.S.C. 112(2).

9) Referring to section 12 on pages 5 to 6 of the Office Action, the rejection of claims 1 to 15 as anticipated by or obvious over US Patent 6,395,341 (Arakawa et al.) is respectfully traversed.

The Examiner has acknowledged that the multi-layer arrangement of hybrid polymer materials according to Arakawa et al. is produced in a significantly different manner, which does **NOT** involve first carrying out a polycondensation reaction through hydrolysis until a remaining unreacted amount of the metal alkoxide is reduced to no more than 3 volume %, followed

by mixing an organic polymer with at least the metal alkoxide that has already been subjected to the polycondensation reaction. Instead, according to Arakawa et al., the polycondensation of the metal alkoxide is carried out after mixing with, and in the presence of, the organic polymer.

It is respectfully submitted that the resulting product, namely the resulting multi-layer laminate, has significantly different product characteristics due to the different production process. The Examiner states that a product-by-process claim is not patentable based on the production process steps. Nonetheless, present claim 1 is patentable due to the different resulting product features of the claimed multi-layer laminate. These different product features are demonstrated in the disclosure of the present application.

Table 3 (page 17) of the present specification shows the relationship between the amount of remaining TEOS in solution A and the film transmittance of the resulting products according to examples of the present invention and according to comparative examples. Also, Fig. 13 of the drawings of the present application shows the relationship between the amount of remaining TEOS in solution A and the domain size in the film in the resulting products according to examples of the present invention and according to comparative examples. In both Table 3 and Fig. 13, the remaining amount of TEOS refers to the remaining unreacted amount of an example metal alkoxide after performing the polycondensation through hydrolysis so that the remaining amount of the TEOS is reduced to no more than 3

volume % (according to the invention), before mixing an organic polymer with the TEOS.

Table 3 and Fig. 13 both clearly demonstrate that the remaining unreacted amount of a metal alkoxide prior to mixing with an organic polymer affects pertinent product features or characteristics of the resulting product, i.e. the claimed laminate of stacked layers of respective organic-inorganic composite materials. For example, the film transmittance and the domain size of the resulting product are significantly influenced by the remaining unreacted amount of the metal alkoxide prior to mixing with the organic polymer (see, for example, page 17 lines 6 to 9, and page 18 lines 15 to 20, of the specification).

Contrary to the present invention, Arakawa et al. disclose a product prepared by mixing a metal alkoxide with an organic polymer without performing polycondensation of the metal alkoxide prior to mixing with the organic polymer. Thus, the disclosure of Arakawa et al. corresponds to the remaining unreacted amount of the metal alkoxide being 100%, because no polycondensation reaction is carried out prior to mixing with the organic polymer, so that all (100%) of the metal alkoxide is unreacted before mixing with the organic polymer. Considering Table 3 and Fig. 13 of the present application, it can be clearly recognized that a 100% remaining amount of metal alkoxide prior to mixing with the organic polymer will have significantly different product characteristics of the resulting product such as a much lower film transmittance and a much greater film domain size.

Furthermore, a person of ordinary skill in the art would have found no suggestion or motivation to prepare a product

characterized by polycondensating the metal alkoxide until the remaining unreacted amount thereof is reduced to no more than 3 volume %, before mixing an organic polymer with the metal alkoxide that has been subjected to the polycondensation. Namely, Arakawa et al. would have provided no teachings, suggestions, motivations, purposes, or benefits to be achieved by proceeding with such a different production process. Thus, a person of ordinary skill in the art could not have expected to achieve a product with significantly different product characteristics as according to the present invention.

For the above reasons, the product claimed in present independent claim 1 has significantly different product features, and is not anticipated by, and would not have been obvious over, the disclosures of Arakawa et al. The Examiner's assertion that the claimed product would have been identical to (or at least obvious from) the product according to Arakawa et al. is contradicted by the evidence of record, for example Table 3 and Fig. 13 of the present application, as pointed out above. Thereby, the Examiner's assertions of a prima facie rejection have been overcome.

The dependent claims are patentable already in view of their dependence from claim 1.

The Examiner is respectfully requested to withdraw the rejection of claims 1 to 15 in comparison to Arakawa et al.

- 10) Favorable reconsideration and allowance of the application,  
including all present claims 1 to 15, are respectfully requested.

Respectfully submitted,  
Keiichi KURAMOTO et al.  
Applicant

WFF:sk/4633  
Enclosures:  
Transmittal Cover Sheet  
IDS  
Form PTO-1449  
Form PTO-2038  
3 references  
return receipt postcard

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I hereby certify that this correspondence with all indicated enclosures is being deposited with the U. S. Postal Service with sufficient postage as first-class mail, in an envelope addressed to: COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 on the date indicated below.

Walter F. Fasse 7/7/06  
Name: Walter F. Fasse - Date: July 7, 2006